Summary of Changes
ILM05.2 to ILM05.3

This document is an overview of the major changes (additions and deletions) made to the Contract Laboratory Program Statement of Work for Inorganic Analysis. This document is intended to provide a high level summary of major changes between ILM05.2 and ILM05.3. It is recommended that the SOW is reviewed in its entirety.

EXHIBIT SECTION(S)	REVISIONS
GENERAL	
General	Unless otherwise identified, all references to: • USEPA Office of Emergency and Remedial Response (OERR) are changed to USEPA Office of Superfund Remediation and Technology Innovation (OSRTI). • Analytical Operations/Data Quality Center (AOC) are changed to Analytical Services Branch (ASB).
General	All references to "ILM05.2" are changed to "ILM05.3".
EXHIBIT B	
Exhibit B: Section 1.2	The SMO address: 2000 Edmund Halley Drive, Reston, VA 20191-3400 is updated to 15000 Conference Center Drive, Chantilly, VA 20151-3808.
Exhibit B: Section 2.5.1.5 and Summary Forms	Sample Traffic Reports/Chain of Custody Records are included in the new Section 2.5.1.5 and, for consistency, the sequence of the first five deliverables listed on Summary Form DC-2 is modified as follows: Cover Page; SDG Narrative; Sample Log-In Sheet (DC-1); Inventory Sheet (DC-2); and Traffic Report/Chain of Custody Record(s). *The instructions indicating that Form DC-2 is not to be numbered are deleted from Section 3.6.2.1 and Summary Form DC-2.*
Exhibit B: Section 2.5.2.3.5, Table 2, Footnote 3	The section is deleted in its entirety to eliminate the use of a two-character terminator (##) for EPA sample numbers ICV, ICB, CCV, CCB, ICSA, ICSAB, CRI, LCSW, LCSS, PBW, PBS, LRS, BASELINE, RESLOPE, MIDRANGE, and TUNE. *The two-character terminator (##) is deleted from these EPA sample numbers in Table 2, from the EPA sample numbers in Exhibit H, Section 9.3.1, and from appropriate footnotes in Exhibit H.*
Exhibit B: Section 2.5.3	The section is deleted in its entirety.
Exhibit B: Section 3.3.9	The Rounding Rule is modified to the following: If the figure following those to be retained is greater than or equal to 5, the absolute value of the result is to be rounded up; otherwise the absolute value of the result is to be rounded down. For example, -0.4365 rounds to -0.437 and -2.3564 rounds to -2.356.

EXHIBIT SECTION(S)	REVISIONS
Exhibit B: Sections 3.4.4.2.3, 3.4.4.2.5, 3.4.7.2.5, 3.4.7.2.6, 3.4.8.2.3, 3.4.8.2.4, 3.4.9.2.6, 3.4.9.2.7, 3.4.10.2.6, 3.4.11.2.2, and 3.4.11.2.3	The reporting requirements for CRI, matrix spike, post-digestion spike, duplicate, solid Laboratory Control Sample (LCS), and serial dilution results are specified as follows: For each analyte, enter the value of the result [if the concentration is greater than or equal to the MDL]; enter the CRQL if the concentration is less than the MDL.
Exhibit B: Section 3.4.4.2.7	The instructions for the CRI %R calculations are updated to specify that a value of zero shall be used in the equations if the analyte value is less than the MDL.
Exhibit B: Sections 3.4.5.2.3 and 3.4.5.2.5	The reporting requirements for ICB and CCB results are changed to three decimal places. *The example in Section 3.4.5.2.8 is updated accordingly.*
Exhibit B: Sections 3.4.6.2.3, 3.4.6.2.4, 3.4.6.2.5, 3.4.6.2.7, 3.4.6.2.9, and 3.4.6.2.11	The reporting requirements for ICSA/ICSAB "True"concentrations and Initial/Final "Found" concentrations are changed to two significant figures if the value is less than 10, and three significant figures if the value is greater than or equal to 10. The Initial and Final "Found" ICSA/ICSAB concentrations are to be reported for each analyte and interferent (ICP-AES) and for each analyte (ICP-MS).
Exhibit B: Section 3.4.16.1.1	The requirements regarding sample listing are updated to include all prepared calibration standards and QC standards (e.g., ICV/CCV, ICB/CCB, CRI) for mercury and the cyanide distilled ICV and midrange standard.
Exhibit B: Section 3.4.18.2.3	The reporting requirements for the average mass are revised in part to read: "...enter the average mass calculated from the five or more tune analyses (in atomic mass units to two decimal places) measured for each isotope."
Exhibit B: Section 3.4.18.2.5	The reporting requirements for the %RSD are revised in part to read: "...enter the percent Relative Standard Deviation of the absolute signals (intensities) for each isotope calculated from the five or more tune analyses."

EXHIBIT SECTION(S)	REVISIONS
EXHIBIT C	
Exhibit C: Section 1.0	Section 1.0 (Inorganic Target Analyte List and Contract Required Quantitation Limits) is revised as follows. • The ICP-AES water CRQL is changed to 10 µg/L for arsenic. *The examples in Exhibit B, Section 3.4.5.2.8 and in Exhibit D/ICP-AES , Section 12.5.4 are updated accordingly.* • The ICP-AES soil CRQL is changed to 2.5 mg/kg for cyanide. • The ICP-AES soil CRQLs for all target analytes are updated to reflect the change in Exhibit D/ICP-AES Section 10.1.4.1.4 regarding digestate dilution. • The deletion of aluminum from the ICP-MS Target Analyte List. *Tables 2 and 5 in Exhibit D/ICP-MS, Section 17 are updated accordingly.* • The ICP-MS water CRQL is changed to 1 µg/L for cobalt and manganese, and to 2 µg/L for zinc.
EXHIBIT D/INTRODUCTION	
Exhibit D/Introduction: Sections 1.9.1 and 1.9.2	Specifications for diluted sample analysis are modified to require that diluted analyte(s) instrument readings be within the upper 75% of the calibrated or linear range.
EXHIBIT D/ICP-AES	
Exhibit D/ICP-AES: Section 7.1	The following paragraph is deleted: "Acids used in the preparation of standards and for sample processing must be ultra-high purity grade or equivalent. (Redistilled acids are acceptable)."
Exhibit D/ICP-AES: Section 7.2.2.1	The ultra high-purity requirement for chemicals and metals is deleted and replaced with reagent grade.
Exhibit D/ICP-AES: Sections 10.1.3.2.2 and 10.1.3.3.2	The high-purity requirement for the concentrated HNO_3 is deleted.
Exhibit D/ICP-AES: Section 10.1.4.1.4	The requirement for digestate dilution to 200 ml is deleted to allow for a final volume of 100 mL. *The soil CRQLs for all ICP-AES target analytes in Exhibit C are updated accordingly.*
Exhibit D/ICP-AES: Section 12.3.1	The description of the CRI analysis sequence is updated to require that the CRI, at the beginning of the run, be analyzed immediately after the ICV/ICB.

EXHIBIT SECTION(S)	REVISIONS
Exhibit D/ICP-AES: Section 12.12.1	The first sentence is revised to read: "Before any field samples are analyzed under this contract, the linear ranges shall be determined and reported prior to the start of the contract analyses, and at least quarterly thereafter by the analysis of a linear range verification check standard, for each element on Form XI-IN."
Exhibit D/ICP-AES: Section 12.13	This section added to provide an example of analysis sequence.
EXHIBIT D/ICP-MS	
Exhibit D/ICP-MS: Sections 6.1.1 and 6.1.2	These sections updated to indicate that glass or plastic beakers (or other appropriate vessels) and watch glasses can be used.
Exhibit D/ICP-MS: Section 7.1	The ultra high-purity requirement for acids is deleted.
Exhibit D/ICP-MS: Sections 7.2.2.1	The ultra high-purity requirement for chemicals and metals is deleted and replaced with reagent grade.
Exhibit D/ICP-MS: Sections 9.2.1and 12.1	The tune requirements can be met by performing five separate, consecutive analyses, or a single analysis with a minimum of five integrations.
Exhibit D/ICP-MS: Section 9.2.1	The peak resolution routines are to be performed following instrument manufacturer's recommendations. *Exhibit B, Section 3.4.18.2.4 and Summary Form XIV-IN and Exhibit D/ICP-MS, Section 12.1 are updated accordingly.*
Exhibit D/ICP-MS: Section 9.2.2	The requirements for internal standards analysis are modified as follows: • A minimum of five internal standards shall be used. *The language in the title of Table 4 in Exhibit D/ICP-MS, Section 17 is updated accordingly.* • The internal standards shall not be included in the tuning solution. • The internal standards selected for a run must be consistent throughout the entire run.
Exhibit D/ICP-MS: Sections 10.1.3.1, 10.1.3.1.1, 10.1.3.1.2, and 10.1.3.1.3	These sections are deleted in their entirety to eliminate the direct analysis option. All associated sections are renumbered accordingly. *All references to the direct analysis option are also deleted from the following sections:* • *Exhibit B, Section 2.5.2.3.3 and the Note in Section 3.4.2.2.5.1.* • *Exhibit D/ICP-MS, Sections 1.0, 10.2.6, 11.4, and 12.7.1.*

EXHIBIT SECTION(S)	REVISIONS
Exhibit D/ICP-MS: Sections 10.1.3.2 and 10.1.3.2.1	A description of an additional ICP-MS sample preparation method is provided: Shake sample and transfer 50-100 mL of well mixed sample to an appropriate polytetrafluoroethylene (PTFE), polypropylene, or polyethylene heating vessel. Add 2 mL of (1+1) nitric acid and 1 mL of (1+1) hydrochloric acid to the vessel. Cover with a ribbed watch glass or similar cover and heat on a hot plate, block digester, or equivalent heating source which is adjustable and capable of maintaining a temperature of 92-95°C until the sample volume has been reduced by half. Cover with a watch glass or similar cover to prevent further evaporation and reflux an additional 30 minutes. Cool sample and filter to remove insoluble material. NOTE: In place of filtering, the sample, after dilution and mixing, may be centrifuged or allowed to settle by gravity overnight to remove insoluble material. Adjust volume to 50-100 mL with reagent water. The sample is now ready for analysis. If volumes less than 100 mL are used, all other reagents shall be reduced appropriately (e.g., if 50 mL is used, reduce reagent volumes by one-half). The final volume of the digestate must equal the initial volume of the sample aliquot. *The following updates are made accordingly:* • *Preparation Code "HW3" is added to Exhibit B, Section 3.4.12.2.4 and Exhibit H, Section 9.4, Footnote 1.* • *An equation for sample concentration calculation is provided in Exhibit D/ICP-MS, Section 11.5.* • *The method reference is reported in Exhibit D/ICP-MS, Section 16.4.*
Exhibit D/ICP-MS: Section 12.4.1	The description of the CRI analysis sequence is updated to require that the initial analysis be performed immediately after the ICV/ICB (and immediately followed by the ICS) and subsequent analyses be immediately followed by CCV/CCB.
Exhibit D/ICP-MS: Section 12.6.2	The requirements for the ICS analyses are revised in part to read: "...the Contractor shall analyze and report the results for the ICS for all elements on the Target Analyte List (TAL) and analyze for all the interferents, at the beginning of each analysis run..."
Exhibit D/ICP-MS: Section 12.10.5	Additional requirements regarding the reporting of serial dilution results are specified as follows: "If the internal standard responses for the field sample chosen for serial dilution analysis are not within the limits and the appropriate corrective action (two-fold dilution and reanalysis) is taken, the following shall apply to the serial dilution analysis: if the internal standard responses of the field sample reanalysis are within the limits, the serial dilution results are to be reported from a five-fold dilution of the reanalyzed sample. If the internal standard responses of the field sample reanalysis are not within the limits, the serial dilution results are to be reported from a five-fold dilution of the original sample."

EXHIBIT SECTION(S)	REVISIONS
Exhibit D/ICP-MS: Section 12.11.1	The corrective actions associated with internal standard(s) noncompliance are modified as follows: • The requirements for calibration blank reanalysis are deleted. • Reanalysis is applicable only to the affected field sample(s), matrix spike(s), or duplicate(s).
Exhibit D/ICP-MS: Section 12.11.1	Reporting requirements are updated as follows: "If the internal standard responses for the diluted sample analysis are within the limits, report the results of this analysis on the appropriate Summary Form. If the internal standard responses for the diluted sample analysis are not within the limits, note this in the SDG Narrative and report the results of the undiluted original sample analysis on the appropriate Summary Form."
Exhibit D/ICP-MS: Section 12.13.1	The first sentence is updated to specify that the linear calibration range shall be determined prior to the start of contract analyses and at least quarterly thereafter.
Exhibit D/ICP-MS: Section 12.14	This section is added to provide an example of an analysis sequence.
Exhibit D/ICP-MS: Section 17, Table 3	The "Expression Proportional to Elemental Concentration" value for selenium is changed to (1.0000) (^{82}C).
EXHIBIT D/MERCURY	
Exhibit D/Mercury: Section 1.0	"Organic mercurial" is changed to "organo-mercury compounds".
Exhibit D/Mercury: Section 7.2.1.1	The ultra high-purity requirement for chemicals and metals is deleted and replaced with reagent grade.
Exhibit D/Mercury: Sections 10.1.3.1.1, 10.1.3.2.1.1, and 10.1.4.1.1	Language added to indicate that the use of suitable digestion vessels other than BOD bottles is permitted.
Exhibit D/Mercury: Sections 10.1.3.1.2 and 10.1.4.1.2	Language added to indicate that the use of block digesters is permitted.
Exhibit D/Mercury: Section 10.1.3.2.1.1	The requirements for sample volume are modified to allow 50-100 mL initial volume.
Exhibit D/Mercury: Section 12.3.1	The description of the CRI analysis sequence is updated to require that the CRI, at the beginning of the run, be analyzed immediately after the ICV/ICB.
Exhibit D/Mercury: Section 12.9	The section is added to provide an example of an analysis sequence.

EXHIBIT SECTION(S)	REVISIONS
EXHIBIT D/CYANIDE	
Exhibit D/Cyanide: Section 9.3.5	The section is added to specify analysis requirements for baseline and reslope samples: • Baseline correction is acceptable as long as it is performed after every sample or after the Continuing Calibration Verification (CCV) and Blank (CCB) check. • Resloping is acceptable as long as it is immediately preceded and immediately followed by a compliant CCV and CCB.
Exhibit D/Cyanide: Section 10.2.1.1	The midrange standard must be analyzed immediately after the first CCV/CCB.
Exhibit D/Cyanide: Section 12.3.1	The description of the CRI analysis sequence is updated to require that the CRI be analyzed, at the beginning and end of the run, immediately after the ICV/ICB.
Exhibit D/Cyanide: Section 12.9	The section is added to provide an example of an analysis sequence.
EXHIBIT G	
Exhibit G	The definition of Analytical Sample is updated to include the cyanide mid-range standard. The following definitions have been added: • Baseline - an analysis used to reset the baseline during mercury or cyanide runs. • Midrange - a distilled standard at a concentration approximately equivalent to the midpoint of the calibration curve used to verify the reliability of the distillation procedure. • Reslope - an analysis used to re-align the calibration curve during mercury or cyanide runs.
EXHIBIT H	
Exhibit H: Section 5.0	The remarks regarding the Record Sequence Number specification are updated to indicate that the numbers reported for consecutive records within a run must be in ascending order from 00000 to 99999 and can only be repeated when 99999 is reached. The combination of record sequence number and record checksum must be unique within each run.
Exhibit H: Section 9.6, Footnote 19	Language added to indicate that the ICP-MS internal standard results are not to be qualified.
Exhibit H: Section 9.9	Footnote 32 is added to specify that there must be as many consecutive Type 34 records as there are wavelengths or masses used for the analyte identified in the preceding Type 30.